Collins 718U-5( )
Lightweight HF Airborne Transceiver

pilot's guide

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Introduction

The 718U family of hf transceivers consists of various receiver-exciter, power amplifier/antenna coupler, and control boxes. These system components can be configured to fit in a variety of fixed and rotary wing aircraft. The selection of a particular configuration of equipment depends upon the aircraft mission, dimensions, antenna, and the requirements of the service in which it will be used.

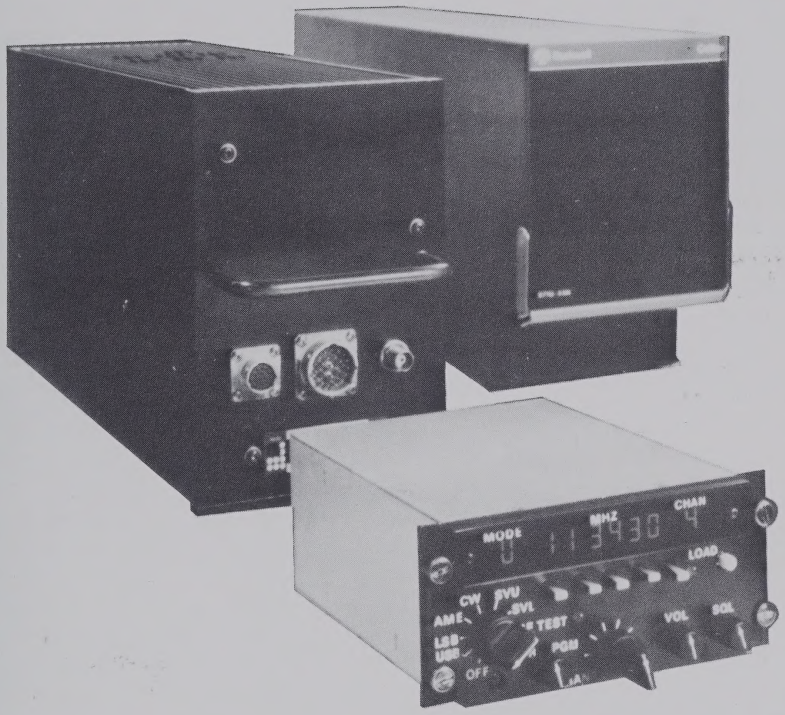
The Collins 718U-5N/5M is a performance proven system flying on over 75 aircraft in countries throughout the world. The military nomenclature ARC-174 has been assigned to a version of the 718U-5 for its acceptance and usage in the U.S. Government Department of Defense. The 718U-5 is compatible with the advanced communications techniques of error corrected teletype (ARQ), secure voice, and the patented Collins "SELSCAN" method for improving connectivity in communications networks.

Qualified service and support is available around the world at Rockwell-Collins facilities and a network of dealer/service agencies.

The 718U-5N was developed to meet the hf narrow-band requirements of FCC Part 87 and International Civil Aviation Organization (ICAO) for aviation services. The Aeronautical Radio, Inc. (ARINC) and ICAO services provide for "flight regularity" messages for aeronautical mobile use and exclude public correspondence.

The 718U-5M system was developed to meet the requirements of both the aeronautical mobile service and the maritime radio telephone network stations for public correspondence. It meets Part 83 and 87 of FCC requirements.

The following sections of this pilot's guide will familiarize the reader with the generalities of high-frequency radio communications, the particular operation of the 718U-5 systems, and the procedures for the aeronautical and radio telephone services.


MODE
MHZ
CHAN
LOAD
CW
AM
LSB
USB
OFF
TEST
VOL
SQL

The High Frequencies

The high-frequency spectrum (2 to 30 MHz) offers many advantages over other frequencies. Extremely long range for low transmitter power is achieved when the proper operating frequency is used. The characteristic flutter that occasionally plagues the vhf frequencies is absent, the high-frequency signal is free from "screening" caused by physical obstructions, and rain, snow, or fog have less effect upon the radio signal. Unlike vhf or uhf, a large variety of frequencies are available to the high-frequency user, giving a flexibility of operation not found on other frequencies. A large variety of services, accurate time signals, radio-telephone patching, air traffic information, etc, are available to the high-frequency user.

In order to realize the maximum value from your high-frequency communication system, it is helpful to understand the medium, know what facilities are available and how to use them. This manual will aid you in operating your system in the most efficient manner.

High-frequency radio communications are influenced by a number of factors. By understanding these factors, it is possible to achieve maximum communication efficiency with a minimum of adverse effects.

Propagation

When a transmitted signal leaves the hf radio antenna, the rf energy that remains near the earth's surface is termed a ground wave. The standard broadcast stations make use of this wave for distances of a hundred miles or more. As the operating frequency is increased, the signals are attenuated; consequently, ground waves are of little use except for local communications up to about 100 miles for frequencies below 4 MHz.

The bulk of communications in the high-frequency spectrum are by means of the skywave. This wave leaves the transmitting antenna and travels upward from the earth's surface at an angle that would continue into outer space if its path were not bent to bring it back to earth. The wave path is bent, however, by the ionosphere.

The ionosphere blankets the earth and exists in the upper atmosphere from about 60 to 200 miles above the earth's surface. Here, free ions and electrons exist in sufficient quantities to have an effect on radio wave travel.

The ionosphere acts as a giant "mirror" and reflects radio signals of certain frequencies back to the earth, frequently many thousands of miles away from the transmitter. The reflective ability of the ionosphere is largely a function of the radio signal frequency. The highest frequency reflected back to earth is referred to as the maximum usable frequency (muf). At the muf, the radio wave is absorbed the least; therefore, the best communications are usually obtained using a frequency as close to the muf as practical. The muf fluctuates with variations in the ionosphere, most noticeably between day and night. A general rule of thumb is to use higher frequencies (10 to 28 MHz) during daylight and lower frequencies (2 to 10 MHz) at night.

During the summer months, the muf varies over a restricted band of frequencies. The entire hf spectrum is usually usable, with the higher frequencies (10 to 28 MHz) remaining "open" throughout the night. During the winter months, the higher frequencies deteriorate approximately at sunset time, and the lower frequencies (2 to 10 MHz) improve with signals reaching tremendous strengths over very long paths.

One of the characteristics of the hf communications is long-term fading. Each radio wave that is reflected by the ionosphere is affected slightly differently by the ionosphere. This fading may cause a signal to increase or decrease several times a second to once every few minutes, but is more typically over a period of several minutes. Fading may be very different for two frequencies relatively close to each other.

Known as selective fading, this phenomena is most pronounced on transmission below 6 MHz. If too severe it may often be eliminated by choosing another operating frequency.

Operating Modes

The following paragraphs describe in general the operating modes used in the high-frequency spectrum.

CW (Continuous Wave)

With CW, the transmitter is keyed on and off by a hand-operated telegraph key. Maximum efficiency depends on the operator efficiency with the international Morse code. Many high-frequency stations, particularly maritime mobile, use CW because of the relatively simple equipment and reliability of communications. When receiving CW, the receiver should be placed in a CW, USB, or LSB mode to produce a pleasant note rather than a "thumping."

AM (Amplitude Modulation)

In amplitude modulation, the radiated energy is varied according to the applied modulation from a microphone. AM continues to be popular in the hf spectrum. The equipment used is not much more sophisticated than that used for CW and has the advantage that one does not have to be skilled in the use of code to convey intelligence. Its disadvantages are that it occupies a wide spectrum (typically 5 kHz) and is inefficient in the sense that a great deal of unneeded carrier is generated to carry the modulation. When receiving AM, the receiver should be set to an AM mode.

SSB (Single Sideband)

Single-sideband equipment performs the same function as AM with considerably greater efficiency. The SSB transmitter transmits only an upper sideband (USB) or lower sideband (LSB) with very little carrier. All of the transmitted signal is useful intelligence. An SSB transmitter, consuming no more power than an AM transmitter, provides about eight times the talk power. Some major advantages of SSB as opposed to AM are greater talking power, reduced power drain, longer range, conservation of the spectrum, and clearer intelligence.

When received on an AM receiver, SSB signals sound like "quacking." To produce the desired quality, the receiver should be placed in USB or LSB. It may be necessary to retune slightly (1 or 2 kHz) to properly receive the signal.

Operator and Station Licensing

An airborne radio transmitter must be operated by or under the direct supervision of a licensed radio operator. This operator must have at least a restricted radiotelephone operator permit. The permit is available by mail without examination. A fee is required and a prospective operator must complete FCC Form 753.

A new aircraft station license is obtained by completing FCC Form 404. Either application should be processed through the Federal Communications Commission, P.O. Box 1040, Gettysburg, PA 17325.

The 718U-5M is licensed under both Part 87, Aviation Mobile Services, and Part 83, Maritime Mobile Service, and may work both ARINC and mobile Maritime Stations.

Frequency Standards and Time Signals

Located throughout the high-frequency spectrum are several time and frequency signals. The most prominent of these are WWV at Fort Collins, Colorado, and WWVH at Kekaha, Kauae, Hawaii. WWV broadcasts on 5.0, 10.0, 15.0, and 20.0 MHz. WWVH broadcasts on 2.5, 5.0, 10.0, 15.0, and 20.0 MHz. Both stations broadcast continuously. Every minute the precise time is broadcast. WWV uses a male voice and WWVH uses a female voice. Time announcements are in GMT. One-second markers are broadcast through all programs except for the 29th and 59th second of each minute.

Of special interest to the high-frequency users are the propagation forecasts. Every 15th minute of each hour, WWV gives voice announcements with short-term forecasts. These forecasts are for the North Atlantic transmission paths, but in general apply to the northern hemisphere. These broadcasts consist of a letter and a numeral. The letter applies to general propagation conditions: N for normal, U for unsettled, and W for disturbed. The number refers to the next six hours and is as follows:

1—useless	4—poor to fair	7—good
2—very poor	5—fair	8—very good
3—poor	6—fair to good	9—excellent

General Operating Procedures

When operating in the high-frequency spectrum, remember to listen first in order to prevent unnecessary interference. When calling a ground station, use the following format:

"WXX this is Piper NIIC Over"

The station will respond. Go ahead and state your business.

Occasionally a station may not immediately respond to your call. This may not mean he has not heard you; he may simply be "working" another station that you may not be able to hear because of the skip, described earlier. Wait a few minutes and repeat the call.

The hf spectrum has many eavesdroppers. Shortwave listening is a popular hobby throughout the world. Remember that your conversation can easily be monitored and choose your words accordingly. Severe penalties also exist for using profanity or abusive language.

718U-5M Operating Controls

The 718U-5M consists of a 671U-4AN Receiver-Exciter, a 548S-3A or 548S-5A Power Amplifier-Coupler, a 514A-7 Radio Set Control, and associated mounts.

NOTE

The 718U-5M has the capability of operating split frequency, half-duplex operation for the mobile maritime service and normal operation for aviation mobile service operation.

Function Selector

The desired operating mode is selected by setting the function (mode) selector to one of the following positions.

USB (upper sideband)
LSB (lower sideband)
AM (amplitude modulated)
CW (continuous wave keyed carrier for CW keyer)
NBSVU (narrow-band secure voice USB)
NBSVL (narrow-band secure voice LSB)
RF TEST (check operational status of system)

Frequency Selectors

Transceiver operating frequency is selected by the following frequency selector switches until the desired operating frequency is indicated.

MHz
100 kHz
10 kHz
1 kHz
0.1 kHz

The switches may be operated in any order.

Volume Control

The volume control (VOL) on the 718U-5M is adjusted for desired audio from speaker. Maximum CW position equals maximum volume.

Squelch Control

The squelch (SQL) control on the 718U-5M is adjusted to mute undesired background noise. The SQL combines preset squelch with rf gain control. The preset squelch provides fixed threshold squelch to mute the receive audio, and the rf gain control provides variable gain for the rf input signal to control background noise.

RF Test Lamp

Four conditions of the RF TEST lamp indicate the operational status of the 718U-5M. Lamp lit or flashing with system unkeyed provides a lamp test of the RF TEST lamp. The 514A-7 must be in RF TEST mode with the system keyed during a tune cycle for the following indications to be valid. Lamp out, flashing, or lit with system TUNING indicates the operational status of the rest of the hf system. If the lamp is out, the system is operational; if flashing, the 548S-3A or 548S-5A is faulty; if lit steadily, the 671U-4AN is faulty.

Channel Select Control

The channel select control provides for nine preset channels with half-duplex capability and one position (MAN) that is simplex operation only.

Preset Controls

The operate/program (OPR/PGM) selector switch, in conjunction with the program load (LOAD) pushbutton and channel selector switch, allows front panel programming of the preset channels.

Indicators

The MODE indicators display the particular mode in which the 718U-5M is operating; the MHZ indicators display the frequency at which the 718U-5M is operating; and the CHAN indicators display the channel on which the 718U-5M is operating.

Operation

Warmup

No warmup is required before operating.

Duty Cycle

Receive: Continuous for all modes.

Transmit: 1.0 minute transmit and 3.0 minutes receive for SSB voice up to 55 °C (131 °F) ambient; 1.0 minute transmit and 7.0 minutes receive for voice modulated AM and keyed CW up to 55 °C (131 °F).

Off Mode

When mode switch is set to OFF position, the hf system is turned off independent of channel select switch setting, and the 514A-7 display and all controlled indicators are blanked. The 718U-5M goes to low power with keep alive circuits only.

Manual Operation

Manual mode of operation is initiated by positioning the channel select switch to the MAN position. If the mode select switch is in OFF position, the hf system is turned off. The 718U-5M will respond to the mode select switch setting, and the mode is displayed. The operating frequency is selected with the frequency select switches and is displayed by the frequency indicators.

If the channel switch is positioned to a preset, the manual mode information is stored in memory and is recalled when the channel select switch is returned to the MAN position.

The 514A-7 initializes to 2.000 0 MHz when power is applied with the channel select switch in the MAN position.

Voice Communications

a. Set mode selector switch to desired operating voice mode (USB, LSB, or AM).

b. Set frequency selector switches to the desired operating frequency.

c. If squelch operation is desired, rotate SQL control fully clockwise. With no signal present, rotate SQL control counterclockwise until the background noise is reduced to a comfortably audible level or until the control is fully counterclockwise. After a short delay, the receiver will mute.

d. Tune the system by depressing the push-to-talk switch momentarily. The system will then tune automatically. A constant tone will be heard in the earphones or speaker during the tune cycle. The average tune cycle is approximately 3 seconds. After completion of the tune cycle, the constant tone will disappear and receiver noise will be heard.

NOTE If a fault occurs during the tuning process, an interrupted tone (beeping) will be heard in the headset. To clear a fault, change any frequency selector at least one digit and then return to the desired setting. Another tune cycle may now be attempted by depressing the key.

e. If the above steps are completed with no fault indication, voice transmissions may be made using the microphone (PTT). The presence of sidetone in the earphones or speaker is an indication of transmitter output during transmit operation.

NOTE The lack of sidetone is an indication of transmit signal failure.

f. Adjust VOL control for desired audio.

CW Communications

a. Turn mode selector switch to CW position.

b. With the frequency selector switches, adjust to the desired operating frequency.

c. Turn squelch control to disable position.

d. Tune the system by pressing either CW key or push-to-talk switch momentarily. A constant tone will be heard in the earphone or speaker during the tune cycle (approximately 3 seconds).

CAUTION Observe duty cycle for CW operation.

e. If step d is completed with no fault indication, CW transmission may be made. The presence of sidetone in the headset or handset is an indication of transmitter output during transmit operation.

NOTE The lack of sidetone is an indication of transmit signal failure.

Narrow-Band Secure Voice or Data Operation (Requires voice privacy unit such as Collins VP-110 or a data modem)

a. Turn mode selector switch to SVU (narrow-band secure voice, upper sideband) or SVL (narrow-band secure voice, lower sideband) position.

b. With the frequency selector switches, adjust to the desired operating frequency.

c. Tune and operate the transceiver in the same manner as for normal voice operation, except that the handset that may be on the voice privacy unit or teletypewriter with a data modem will be used in place of the normal audio microphone. There is no sidetone or squelch in the secure voice modes.

Preset Operation

If the selected preset channel has been previously loaded for duplex operation (separate frequency for transmit and receive) or simplex operation (single frequency for both transmit and receive), the 514A-7 displays frequency and mode information (preset information) depending on key input. The displays show current operating status on the 718U-5M.

The mode select switch has no effect in preset operation.

NOTE Ensure mode select switch is in any position other than OFF.

a. Position OPR/PGM switch to OPR position.

b. Position channel select switch to preset channel desired.

NOTE Voice operation is as previously described in manual mode.

Preset Channel Loading

a. Position OPR/PGM switch to PGM.

b. Position channel select switch to channel desired.

c. For simplex operation (single frequency for both transmit and receive), position mode select switch to desired mode for operation, and frequency select switches to desired frequency.

NOTE CW and RF TEST modes cannot be programmed into preset channels. The mode and frequency indicators show current information to be programmed. 718U-5M stays in receive and does not respond to programming information.

d. Depress LOAD pushbutton.

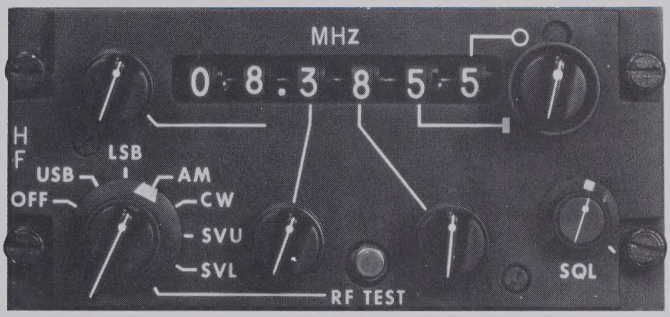
e. For half-duplex operation (separate frequency for transmit and receive), perform steps a through d to load receive frequency first.

f. While holding the PTT key, change frequency select switches to desired transmit frequency and depress the LOAD pushbutton.

Mobile Maritime Radiotelephone Operation (A3A Emissions)

A3A emissions for radiotelephone operation are accomplished manually by using USB or LSB for voice communications and grounding rear connector pilot carrier input. A3A emissions for radiotelephone operation are automatic without grounding rear connector pilot carrier input when the channel is preset for half duplex with USB or LSB as the programmed mode.

718U-5/5N Operating Controls



The 718U-5 consists of a 671U-4A Receiver-Exciter, a 548S-3 or 548S-5 Power Amplifier-Coupler, a 514A-3/4 Radio Set Control, and associated mounts.

The 718U-5N consists of a 671U-4AN Receiver-Exciter. A 548S-3A or 548S-5A Power Amplifier-Coupler, a 514A-4 Radio Set Control, and associated mounts.

The commercial version of the 718U-5/5N provides no CW or NBSV capabilities. The radio set control used is the commercial version of the 514A-4 and provides no CW or NBSV modes of operation.

Function Selector

The desired operating mode is selected by setting the function (mode) selector to one of the following positions.

USB (upper sideband)
LSB (lower sideband) (requires FCC approval for commercial use)
AM (amplitude modulated)
CW (continuous wave keyed carrier for CW keyer)
NBSVU (narrow-band secure voice USB)
NBSVL (narrow-band secure voice LSB)
RF TEST (check operational status of system)

Frequency Selectors

Transceiver operating frequency is selected by turning the following frequency selector controls until the desired operating frequency is indicated.

MHz
100 kHz
10 kHz
1 kHz
0.1 kHz

The controls may be operated in any order.

Squelch Control

The SQL control on the 718U-5/5N is adjusted to mute undesired background noise. Setting the control too far counterclockwise can result in blocking out weak signals. The 718U-5/5N has two different types of squelch control depending on the configuration installed in your aircraft. One configuration is the voice-operated squelch control that functions to mute the receiver output in the absence of a receive signal. The other type combines squelch with rf gain control. Adjustment method of the SQL control is different for the two configurations.

RF TEST Lamp

Four conditions of the RF TEST lamp indicate the operational status of the 718U-5/5N. The 514A-3/4 must be in RF TEST mode. Lamp lit or flashing with system unkeyed provides a lamp test of the RF TEST lamp. The system must be keyed during a tune cycle for the following indicators to be valid. Lamp out, blinking, or lit with the system keyed indicates the operational status of the rest of the system. If the lamp is out, the system is good; if flashing, the 548S-3/3A or 548S-5/5A is faulty; if lit steadily, the 671U-4A/AN is faulty.

Operation

Warmup

No warmup is required before operating.

Duty Cycle

Receive: Continuous for all modes.

Transmit: 1.0 minute transmit and 3.0 minutes receive for SSB voice up to 55 °C (131 °F) ambient; 1.0 minute transmit and 7.0 minutes receive for voice modulated AM and keyed CW up to 55 °C (131 °F).

Voice Communications

a. Set the function selector to USB, LSB, or AM.

b. Set the frequency selectors as desired.

c. Set the SQL control completely clockwise.

d. Tune the 718U-5/5N by momentarily depressing the key. A constant tone will be heard while the system is tuning (average tuning time is 3 to 5 seconds unless external elements are used). After tuning, the tone stops and receiver noise will be heard.

NOTE If a fault occurs during the tuning process, an interrupted tone (beeping) will be heard in the headset. To clear a fault, change any frequency selector knob at least one step and then return to the desired setting. Another tune cycle may now be attempted by depressing the key.

e. If the above steps are completed with no fault indication, voice transmission may be made. Depress the key and proceed. The presence of sidetone during transmission is an indication of proper operation.

NOTE The lack of sidetone is an indication of failure.

f. If squelch operation is desired, rotate SQL control fully clockwise. With no signal present, rotate SQL control counterclockwise until the background noise is reduced to a comfortably audible level or until the control is fully counterclockwise. After a short delay, the receiver will mute.

NOTE If background noise was reduced to a comfortable level before the audio was muted, the radio is equipped with a combination rf gain/squelch feature and control should be left at setting described in step f. If control was rotated to the full counterclockwise position with no reduction in background noise, your 718U-5/5N is the standard squelch version and you must perform step g.

g. Rotate SQL knob clockwise one step at a time until background noise is heard (squelch is broken). Set squelch control one position counterclockwise. After a short delay, the receiver will mute.

h. If a new frequency is desired, repeat steps b through g.

CW Communications

a. Set the function selector to CW.

b. Set the frequency selectors to the desired operating frequency.

c. Set the SQL control to its off position (extreme clockwise).

d. Tune the 718U-5/5N by depressing the CW or PTT key momentarily. A constant tone will be heard while the unit is tuning (approximately 3 seconds).

CAUTION Observe the duty cycle for CW operation.

e. If the above steps were completed with no fault indication (beeping), CW transmission may be made using the CW key or teletypewriter.

Secure Voice or Data Operation (Requires voice privacy unit such as Collins VP-110 or a data modem)

a. Set the function selector to NBSVU (narrow-band secure voice upper) or NBSVL (narrow-band secure voice lower).

b. Set the frequency selectors as desired.

c. Set the SQL control to its off position (fully clockwise).

d. Tune and operate the 718U-5/5N as for voice, except use the voice privacy unit or data modem equipment as the key and modulation control.

Operator Maintenance

WARNING DO NOT TOUCH ANTENNA OR ANTENNA FEEDLINE WHEN RADIO IS TRANSMITTING; PAINFUL RF BURNS AND POSSIBLY DEATH MAY RESULT FROM HIGH RF VOLTAGES.

Fault Clearing

After the tune cycle has been completed, the normal tune tone should disappear. Should it fail to disappear, an interrupted tone (beeping) will occur approximately 8 seconds after the tune cycle was initiated. This beeping indicates a fault condition.

To clear the fault, initiate a new tune cycle by either turning the function selector to OFF and back to the operating mode, or turning any frequency selector away from and back to the operating frequency. Key the system. The tune tone should be present for approximately 3 to 6 seconds, and then disappear. If the beeping recurs, try the clearing procedure a second time. If a fault is still indicated, a unit failure is probable. Refer to fault isolation procedure in following paragraphs.

RF Test

The following paragraphs provide procedures for isolating a malfunction to a faulty unit or cable.

Receive Check

Set SQL control fully clockwise and tune to WWV. Check receive operation. Select USB, 20.701 0 MHz, and check for a 1-kHz tone. Select LSB, 20.699 0 MHz, and check for a 1-kHz tone. Select CW, 20.698 0 MHz, and check for a 1-kHz tone in receiver.

RF Test Lamp Check (System Not Keyed)

Set the mode switch to the RF TEST position. Do not key the system. Observe the RF TEST lamp.

If the RF TEST lamp does not light, the lamp is defective or the receiver-exciter is faulty.

If the RF TEST lamp blinks for more than 1 minute, the receiver-exciter is faulty.

If the RF TEST lamp lights immediately or after an initial period of blinking, the RF TEST lamp and fault circuits are operational.

Tune Check

Set the mode switch to the RF TEST position. Change frequency selection to any frequency and key the system momentarily. Observe the RF TEST lamp during the tune cycle while the tune tone is audible. Normal tune time is 3 to 8 seconds.

System Does Not Complete Tune Cycle

NOTE Nominal tune time of the pa coupler is approximately 5 seconds; therefore, the RF TEST lamp indications below are only valid for approximately 5 seconds after initial key is applied.

If no tune tone is heard after initial key, the fault is in the receiver-exciter, the PTT key to the receiver-exciter is faulty, or the exciter tune line between the receiver-exciter and pa-coupler is faulty.

If the RF TEST lamp stays on continuously, the receiver-exciter is faulty.

If the RF TEST lamp blinks on and off, the pa-coupler is faulty.

If the system remains keyed and the tune tone does not stop after 15 seconds, determine which unit is faulty by disconnecting connector J1 from the pa-coupler front panel. If the tune tone drops and a beeping tone is heard, the pa-coupler is faulty. If the tune tone persists, the receiver-exciter or receiver-exciter mount is faulty.

Tune Cycle Complete

If the RF TEST lamp is out, the tune tone drops, and a beeping tone is heard at the end of the time, the pa-coupler and the coupler mount failed to tune the antenna.

If RF TEST lamp is out, switch to the USB mode and supply audio input while holding the sytem keyed. If sidetone is not audible, check audio interphone or microphone system before replacing the receiver-exciter.

Presence of a sidetone indicates that system is working properly.

General Operating Procedures

When operating in the high-frequency spectrum, remember to listen first in order to prevent unnecessary interference. When calling a ground station, use the following format:

"WXX this is Piper NIIC Over"

The station will respond. Go ahead and state your business.

Occasionally a station may not immediately respond to your call. This may not mean he has not heard you; he may simply be "working" another station that you may not be able to hear because of the skip, described earlier. Wait a few minutes and repeat the call.

The hf spectrum has many eavesdroppers. Shortwave listening is a popular hobby throughout the world. Remember that your conversation can easily be monitored, and choose your words accordingly. Severe penalties also exist for using profanity or abusive language.

Company Frequencies

Many fleet operators have their own hf base station with most of them utilizing several frequencies. This allows the companies to keep in contact with their aircraft even when the aircraft are operating great distances from their home base. Operational procedures depend on the operator's needs, and will usually vary between companies. When company frequencies are being used, the established company procedures should be followed.

Description of Services

High-frequency radio communications are used by aircraft to maintain contact with air traffic control during long overwater flights or flights in remote areas not covered by vhf communications.

Hf frequencies are assigned to various areas of the world according to agreements worked out between the International Civil Aviation Organization (ICAO) and the International Telecommunications Union (ITU) and national aviation authorities (such as the FAA in the United States and the CAA in the United Kingdom, etc).

These agreements specify a certain family or network of hf frequencies for each area. A network may consist of as many as seven or more frequencies. When you first contact a ground station for ATC communications, you will normally be assigned two or three hf frequencies to use. Then, if you lose contact on the primary hf frequency due to deterioration of hf propagation, you can switch to your secondary or backup frequency and try to reestablish contact.

Aeronautical Radio, Inc. (ARINC), a private not-for-profit company headquartered in Annapolis, Maryland, has been licensed by the FCC to operate these networks in most areas where the United States has been given responsibility by the ICAO.

ARINC Services

General

The ARINC hf SSB services provide direct voice communications between flight crews and their company offices using phone patch techniques. These services may be used from any location, limited only by the existing propagation discussed earlier.

The ARINC service provides "flight regularity" messages as defined by ICAO and excludes public correspondence. Flight regularity messages are messages that require immediate action on the part of flight crews, aircraft operators, or agencies acting for aircraft operators in order to minimize travel interruptions and maximize aircraft utilization. Air traffic control and meteorological data communication are categorized as flight safety messages, and are usually handled on the ICAO major world air route area high frequency and vhf enroute radiotelephone network or vhf ATS facilities.

The frequncies used in this service are selected from those authorized by the International Telecommunications Union (ITU) for aeronautical mobile use. Public correspondence is not permitted on these frequencies.

The ARINC stations can provide phone patching, electrically connecting the radio link with telephone circuits so the aircraft can communicate directly to the operational offices.

These ARINC stations will also accept messages from the aircraft for relaying via conventional air-ground methods without phone patching if desired.

Frequencies listed are not exclusively ARINC's. The FCC has stipulated that should harmful interference appear on these frequencies, the licensee must cooperate to the fullest extent to clear the interference. Aircraft operators possessing valid aircraft radio licenses issued by the FCC may use the listed frequencies without further modification to their licenses.

Placing Aircraft-to-Ground Calls

To call the home office, the flight crew should call appropriate ARINC stations depending on location. Use the guidelines presented earlier to select one of the frequencies.

When the ARINC ground operator receives a phone patch request, he will verify that the call is being placed to an office authorized by the aircraft operator. If the ground operator determines that the pilot is requesting a call to an office not authorized by the pilot's company, he will refuse to complete the phone patch.

However, if the pilot declares that the call is of an emergency nature, the ground operator may complete it for him.

If the air-to-ground rf signal is not of sufficiently high quality for a successful phone patch, the ground operator will advise the air crew of this and they both may shift to another frequency to attempt better contact. Of course, the ground operator may be able to relay a message for the air crew, if that is suitable.

When the ARINC ground operator determines that the call is to an authorized office, and the signal quality is suitable for a phone patch, the operator will advise the aircraft to stand by for the patch. He will then place the call to the desired office, giving preference to full period direct private lines, where available.

Long distance calls placed by the ARINC operator will be made on a station-to-station basis using direct distance dialing wherever possible.

When the office is reached, the ARINC operator will advise the party that he has a phone patch from the aircraft (by aircraft identification number). He will then connect his radio equipment to the telephone lines and advise the flight crew member to go ahead with his message.

As mentioned previously, this type of communication is simplex; that is, break-ins and interruptions are impossible. Consequently, whenever one party has finished his message or statement, he should indicate by saying "over" or "go ahead." The ground operator uses a system for transmit/receive switching known as VOX (voice operated relay). When he does not speak, the station is in "receive" and receives

the aircraft transmission. As soon as the ground operator or telephone speaker speaks, the relay turns on the transmitter and silences the receiver. The ground speaker should begin his statements with an "err" or "uhh" sound to trip the relay and allow it to function before going into his statement. If a malfunction occurs in the switching system, the ARINC radio operator can manually operate the transmit/receive function.

It is important to remember this one-way characteristic. If both parties speak at the same time, called "doubling," neither can hear the other. Use "over" at the end of each transmission, "stand by" if you wish the party to wait, and your identification and "out" when the communication is completed.

When the conversation has been completed, the party that requested the phone patch should advise the ARINC operator, who will then disconnect the phone patch.

Placing Ground-to-Aircraft Calls

Ground personnel may also originate calls to an aircraft via the ARINC stations. They simply call the ARINC Centers via direct private line facilities, or the unlisted phone patch numbers that are provided to authorized users. Public telephone calls may be placed to an ARINC facility, but must be placed on a station-to-station basis and must be prepaid.

The ground caller must give the following information to the ARINC operator:

a. Identity of the person calling.

b. Name of the company and the office from which the call is being placed.

c. Telephone number from which the call is being placed.

d. Flight identification (radio call sign) of the aircraft.

e. Aircraft flight route.

f. Approximate aircraft location.

The call will be refused by the ARINC operator if the job function, office location, or office telephone number given does not appear on the ARINC operator's list.

When the ARINC operator determines that the call is from an authorized source, he will use his judgment in contacting the aircraft and shifting it to one of the ARINC frequencies. The ARINC operator then advises the caller that the aircraft is ready and to go ahead. When the conversation has been completed, the requesting party should so advise the ARINC operator, who will then disconnect the telephone system.

Points To Remember

- Select frequencies according to the time of day and distance to be covered.
- Ensure that the frequency is clear before calling.
- Speak clearly.
- Call more than one if necessary.

Arranging for ARINC Services

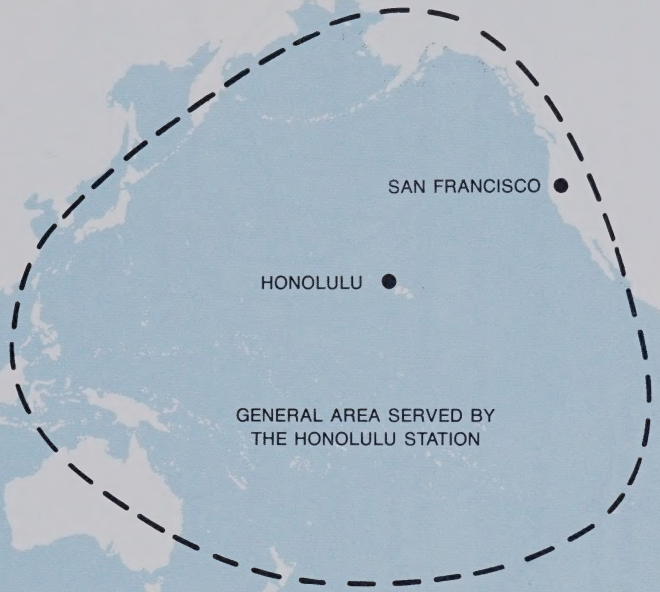
Aircraft operators desiring to use this facility must make prior arrangements for handling their traffic. All inquiries should be addressed to:

Aeronautical Radio, Inc.
ATTN: Services Department
2551 Riva Road
Annapolis, Maryland 21401
Phone (301) 224-4000

If no service agreement is in effect, one must be established. The user organization must supply ARINC with a list of the company offices that they authorize to place or accept phone patches through the ARINC system. The list must include the name of the office or job function, city location, and telephone number.

ARINC headquarters will then provide the Communication Centers with this information, from which phone patch calls may be placed or accepted.

ALL FREQUENCIES ARE SSB, SIMPLEX.
USE USB MODE.
(CHECK WITH ARINC FOR MONITORING FREQUENCY)
GENERAL AREA SERVED BY THE NEW YORK STATION
NAT-B
2899 KHZ
5616 KHZ
8864 KHZ
13291 KHZ
17946 KHZ
NEW YORK
HOUSTON
SAN JUAN
NAT-A
3016 KHZ
5598 KHz
8825 KHZ
13306 KHZ
17946 KHZ
CAR-A
2887 KHZ
5550 KHZ
6577 KHZ
8918 KHZ
11396 KHZ
13297 KHZ
17907 KHZ
AREAS SERVED BY
ARINC HF SSB LONG DISTANCE
OPERATIONAL CONTROL FACILITY
(WORLDWIDE)



ALL FREQUENCIES ARE SSB,
SIMPLEX. USE USB MODE.

CEP-5

2869 KHZ
3413 KHZ
5547 KHZ
5574 KHZ
8843 KHZ
11282 KHZ
13261 KHZ
13354 KHZ
17904 KHZ

ICAO HF Enroute Radiotelephone Networks

The following illustrations show the general outline of the ICAO hf enroute radiotelephone networks and some of the frequencies used.

Although the areas indicated are the areas of primary coverage, it is often possible to contact a station from outside these areas; however, signal strength may be somewhat weak.

When filing your flight plan, it would be advisable to check with flight service to see what frequency the stations on your route will be monitoring.

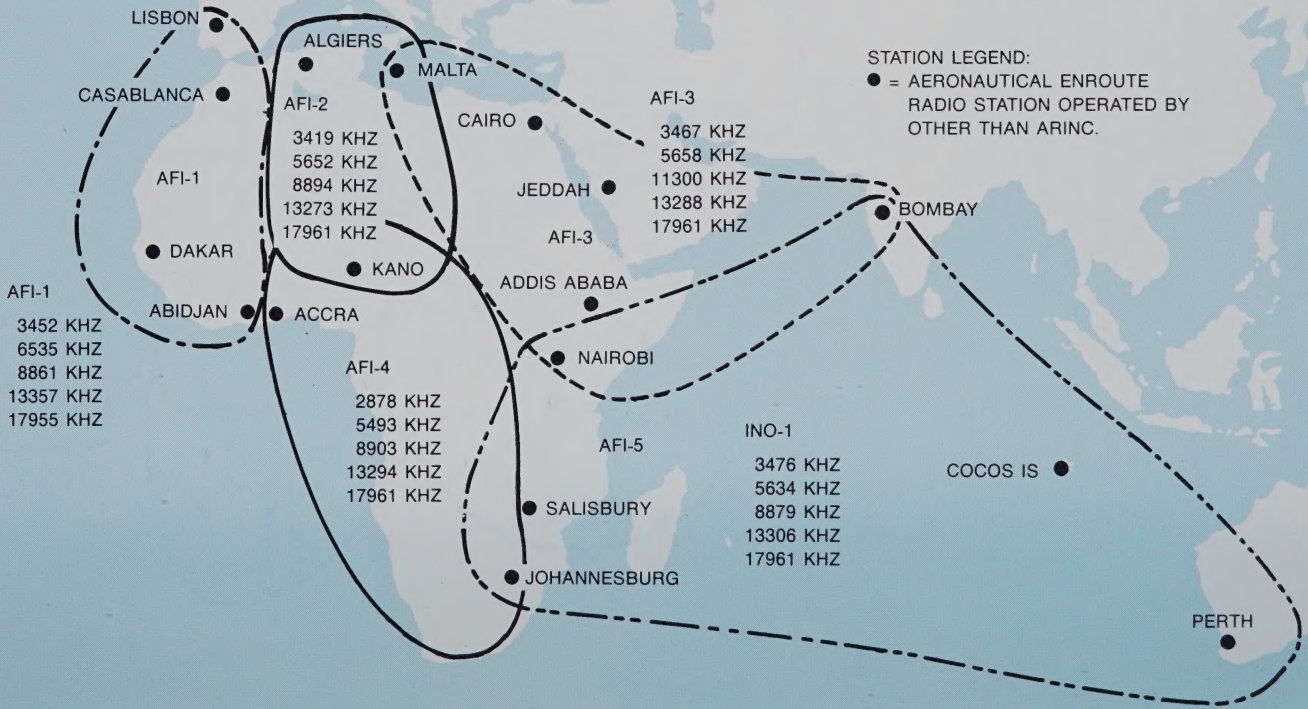
The following notes apply to all of the remaining illustrations.

- The illustrations show frequencies allotted to aeronautical (ground) stations within the general boundaries shown.
- Not all stations on all networks are shown on the illustrations.
- Not all frequencies listed are implemented at all stations.
- ICAO regional air navigation plans should be referred to for additional details.
- Current operational data must be obtained from aeronautical charts and notams.
- The following legends are used.

  ★ = Aeronautical enroute radio station operated by ARINC. All frequencies are simplex, USB mode.

  ● = Aeronautical enroute radio station operated by other than ARINC. All frequencies are simplex, USB mode.

STATION LEGEND:
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC
DELHI
CALCUTTA
MADRAS
COLOMBO
HONG KONG
MANILA
BANGKOK
SINGAPORE
DJAKARTA
COCOS ISLANDS
DARWIN
PERTH
SEA-1
3470 KHZ
6556 KHZ
11396 KHZ
13318 KHZ
17907 KHZ
SEA-2
3485 KHZ
5655 KHZ
8942 KHZ
11396 KHZ
13309 KHZ
17907 KHZ
5649 KHZ
SEA-3
3470 KHZ
6556 KHZ
10066 KHZ
13318 KHZ
17907 KHZ
INO-1
3476 KHZ
5634 KHZ
8879 KHZ
13306 KHZ
17961 KHZ


LISBON
CASABLANCA
ALGIERS
MALTA
CAIRO
AFI-1
AFI-2
3419 KHZ
5652 KHZ
8894 KHZ
13273 KHZ
17961 KHZ
AFI-3
3467 KHZ
5658 KHZ
11300 KHZ
13288 KHZ
17961 KHZ
JEDDAH
BOMBAY
DAKAR
KANO
AFI-3
ADDIS ABABA
AFI-1
3452 KHZ
6535 KHZ
8861 KHZ
13357 KHZ
17955 KHZ
ABIDJAN
ACCRA
NAIROBI
AFI-4
2878 KHZ
5493 KHZ
8903 KHZ
13294 KHZ
17961 KHZ
AFI-5
INO-1
3476 KHZ
5634 KHZ
8879 KHZ
13306 KHZ
17961 KHZ
COCOS IS
SALISBURY
JOHANNESBURG
PERTH
STATION LEGEND:
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.

NEW YORK
CAR-A
MERIDA
SAN JUAN
PANAMA
CARACAS
CAR-A
2887 KHZ
5550 KHZ
6577 KHZ
8918 KHZ
11396 KHZ
13297 KHZ
17907 KHZ
STATION LEGEND:
★ = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY ARINC.
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.

NW/SW SAM

2944 KHZ
4669 KHZ
6649 KHZ
10024 KHZ
11360 KHZ
17907 KHZ

C SAM

3479 KHZ
5526 KHZ
8855 KHZ
10096 KHZ
13297 KHZ
17907 KHZ

SAT 1&2

2854 KHZ
5565 KHZ
11291 KHZ
13315 KHZ
17955 KHZ
3452 KHZ
6535 KHZ
8861 KHZ
13357 KHZ

STATION LEGEND:
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.

NAT A

3016 KHZ
5598 KHZ
8825 KHZ
13306 KHZ
17946 KHZ

NAT C

2962 KHZ
5649 KHZ
8879 KHZ
13306 KHZ
17946 KHZ

NAT B

2899 KHZ
5616 KHZ
8864 KHZ
13291 KHZ
17946 KHZ

NAT D

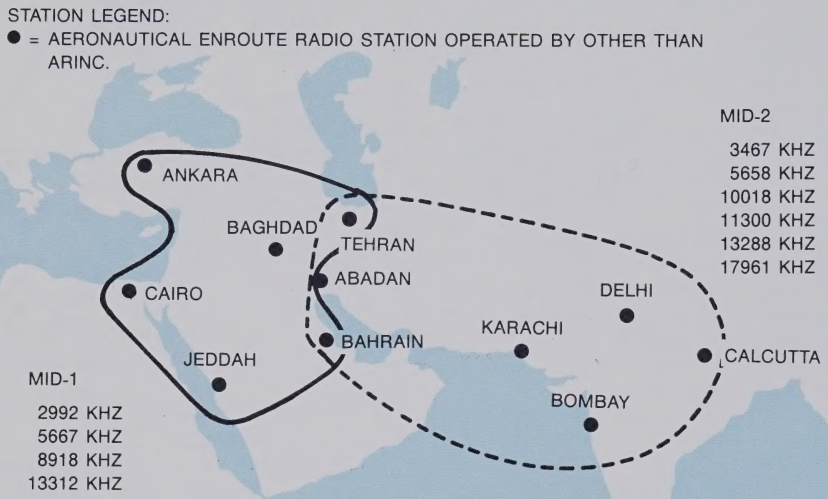
2971 KHZ
4675 KHZ
8891 KHZ
11279 KHZ
13291 KHZ
17946 KHZ

STATION LEGEND:

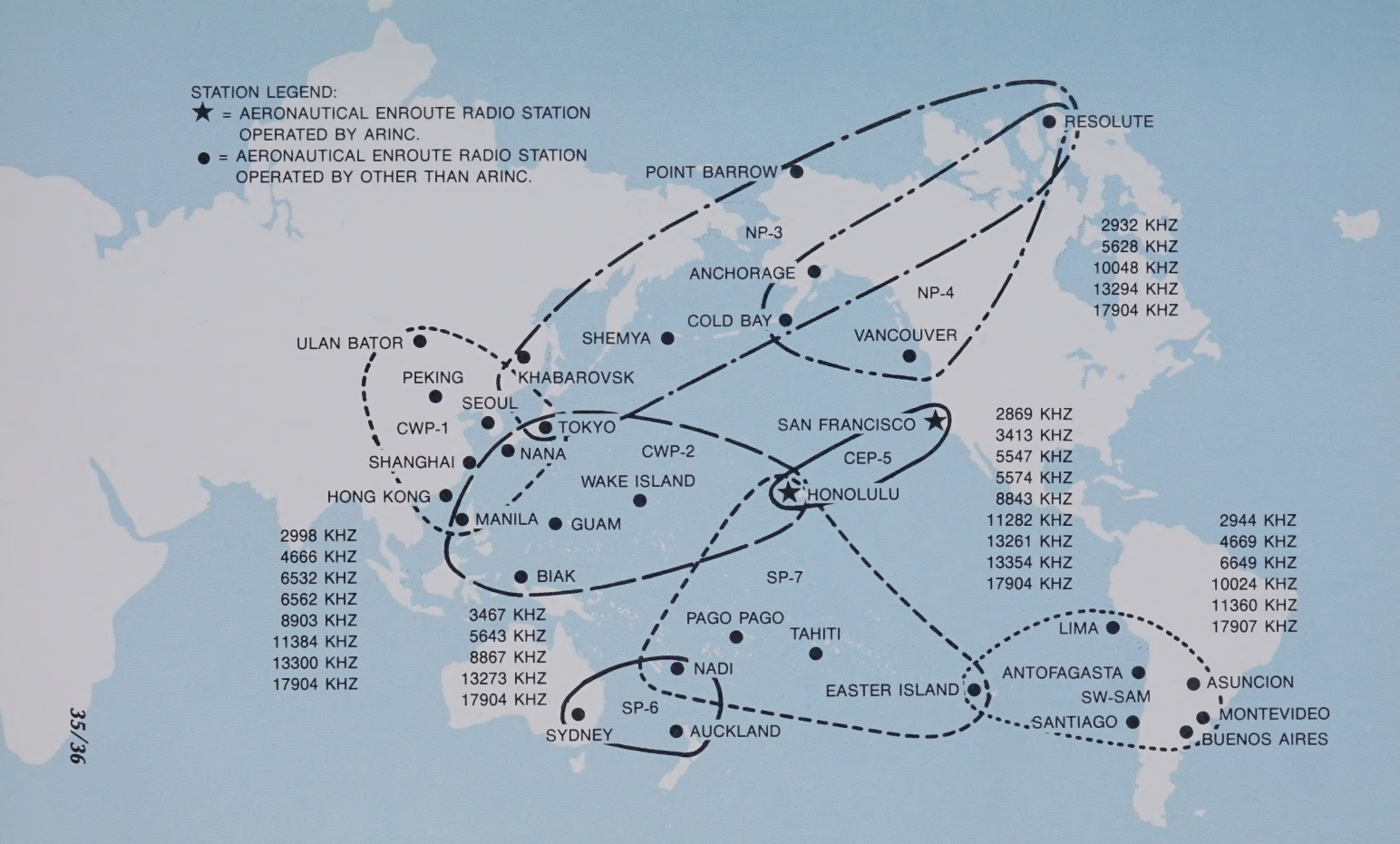
★ = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY ARINC.

● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.

STATION LEGEND:
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.
MURMANSK
LENINGRAD
MOSCOW
ODESSA
EUR-A
3479 KHZ
5661 KHZ
6598 KHZ
10084 KHZ
13288 KHZ
17961 KHZ


STATION LEGEND:
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.
MID-2
3467 KHZ
5658 KHZ
10018 KHZ
11300 KHZ
13288 KHZ
17961 KHZ
ANKARA
BAGHDAD
TEHRAN
ABADAN
CAIRO
DELHI
KARACHI
BAHRAIN
JEDDAH
CALCUTTA
BOMBAY
MID-1
2992 KHZ
5667 KHZ
8918 KHZ
13312 KHZ

NCA-1
3019 KHZ
3019 KHZ
5646 KHZ
13315 KHZ
17958 KHZ
NCA-2
2851 KHZ
4678 KHZ
6592 KHZ
6592 KHZ
10096 KHZ
17958 KHZ
EA-2
3485 KHZ
5655 KHZ
11396 KHZ
13309 KHZ
17907 KHZ
NCA-3
3004 KHZ
5664 KHZ
10039 KHZ
13303 KHZ
17958 KHZ
MID-3
2944 KHZ
4669 KHZ
6631 KHZ
8951 KHZ
11375 KHZ
17961 KHZ
EA-1
3016 KHZ
6571 KHZ
8897 KHZ
10042 KHZ
13297 KHZ
NCA-1
NCA-2
SYKTYVKAR
SURGUT
KIRENSK
KHANTY MANSIYSK
CHULMAN
MOSCOW
IRKUTSK
NCA—3
KUYBYSHER
EA-2
MID-3
NOVOSIBIRSK
KHABAROVSK
MID-3
ULAN BATOR
ALMA ATA
SHENYANG
URUMCHI
PYONGYANG
DUSHANBE
LANZHOU
BEIJING
SEOUL
EA-1
WUHAN
SHANGHI
KUNMING
GUANGZHOU
STATION LEGEND:
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.


STATION LEGEND:
★ = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY ARINC.
● = AERONAUTICAL ENROUTE RADIO STATION OPERATED BY OTHER THAN ARINC.
RESOLUTE
POINT BARROW
NP-3
ANCHORAGE
NP-4
COLD BAY
VANCOUVER
SHEMYA
ULAN BATOR
PEKING
KHABAROVSK
SEOUL
CWP-1
TOKYO
SAN FRANCISCO
NANA
CWP-2
CEP-5
SHANGHAI
WAKE ISLAND
HONOLULU
HONG KONG
MANILA
GUAM
BIAK
SP-7
PAGO PAGO
TAHITI
NADI
SP-6
SYDNEY
AUCKLAND
EASTER ISLAND
LIMA
ANTOFAGASTA
ASUNCION
SW-SAM
SANTIAGO
MONTEVIDEO
BUENOS AIRES
2932 KHZ
5628 KHZ
10048 KHZ
13294 KHZ
17904 KHZ
2869 KHZ
3413 KHZ
5547 KHZ
5574 KHZ
8843 KHZ
11282 KHZ
13261 KHZ
13354 KHZ
17904 KHZ
2998 KHZ
4666 KHZ
6532 KHZ
6562 KHZ
8903 KHZ
11384 KHZ
13300 KHZ
17904 KHZ
3467 KHZ
5643 KHZ
8867 KHZ
13273 KHZ
17904 KHZ
2944 KHZ
4669 KHZ
6649 KHZ
10024 KHZ
11360 KHZ
17907 KHZ

Description of Services

A worldwide network of public correspondence stations operating in the high-frequency band compatible with the 718U-5M make it possible to place personal or operational phone calls in flight. You can be flying thousands of miles from land and reach one of these stations by hf to place your call. These stations link aircraft (and ships at sea) via hf with the regular landline phone system.

The public correspondence stations operate semiduplex operation (different transmit than receive frequency), therefore the presets on the 514A-7 are used.

The 514A-7 Radio Set Control has nine pilot programmable channels all of which can be set for semiduplex operation. The public correspondence stations utilize semiduplex operation. These programmable channels can be set on the ground or in the air by the pilot. For example, coast station KMI in Point Reyes, California, operates on 17 semiduplex channels including ITU channel 401 (aircraft receive on 4357.4 kHz and aircraft transmit on 4063.0 kHz). By preprogramming the transmit and receive frequencies associated with channel 401 into any of the nine preset channels in the 514A-7, you may later recall this semiduplex pair of frequencies by selecting the appropriate preset channel number.

American Telephone & Telegraph (The Bell System) operates three of the four public correspondence stations in the United States utilized for High Seas radiotelephone operation. These are coast stations KMI in Point Reyes, California; station WOO in Manahawkin, New Jersey; and station WOM in Ft. Lauderdale, Florida. The fourth station is station WLO in Mobile, Alabama, which is operated by Mobile Marine Radio, Inc. Another popular public correspondence international station is HEB radio located in Bern, Switzerland.

The Maritime Radiotelephone Network section of this pilot's guide is in three parts. Part one is devoted to the Bell System's High Seas Service; part two describes the service of station WLO and Bern radio HEB; and part three provides a worldwide listing of public correspondence stations.

Bell System High Seas Radiotelephone Service

The Bell System's High Seas Network serves commercial shipping and pleasure boat operators as well as aircraft in flight. The service is widely used for personal and operational calling by all of these users. It also broadcasts weather and gives top priority to safety communication.

High Seas Radiotelephone Operating Procedures

Placing Aircraft-to-Ground Calls

First select the optimum paired channels for the coast station you wish to contact; past experience of monitoring the station's broadcasts will help establish the proper frequencies. Refrain from calling until in-progress transmissions other than station identification have been completed. Calls to shore can be placed at any time without waiting for a broadcast of the shore station's traffic list.

Calls may be placed through the coast station of your choice. In the event that optimum frequencies to a desired station are busy, your call can be placed through either of the other two AT&T coast stations on their assigned channels.

Before completing your call, the High Seas Traffic Operator will ask you for your name, the name and telephone number of the party you wish to reach, and the method of billing — paid, collect, marine credit card, or third number. Should you need time and charges, advise the operator of this before your call is connected.

After your call is completed, stand by until the Technical Operator releases the channel.

Placing Ground-to-Aircraft Calls

Persons on the ground wishing to contact you may dial their local operator from any private or pay telephone and ask for the High Seas Operator serving the aircraft's location:

Atlantic, Gulf of Mexico, Caribbean and Pacific area — Operator 11362 in Jacksonville, Florida

Give the High Seas Operator the aircraft identification (Navajo N11C), radio call letters (if known), approximate location of the aircraft, and then follow the operator's instructions.

Receiving High Seas Calls

You can receive an incoming call only when the 718U-5M system is TURNED ON and TUNED to the frequency of the coast station through which the call is being channeled.

When your aircraft is called, answer the Coast Station on an optimum working channel, stating your aircraft identification and call sign. After contact has been established, the Coast Station operator will make any necessary adjustments to provide you with the best possible circuit for your telephone call.

High Seas Radiotelephone Service Offering

All High Seas calls are treated as person-to-person and charged at the same rate whether they are directed to individuals or telephone numbers.

Conference (multiple) calls can be set up between three or more stations at a special rate. Payments are handled in any of the following four ways:

- PAID CALL — The calling customer pays all charges.
- COLLECT CALL — The calling customer indicates that charges will be billed to the person or station being called.
- THIRD NUMBER — The calling customer refers charges to his office or home number or any other authorized phone number in the U.S.
- MARINE CREDIT CARD — The calling customer indicates that charges will be billed to a marine identification number (MIN).

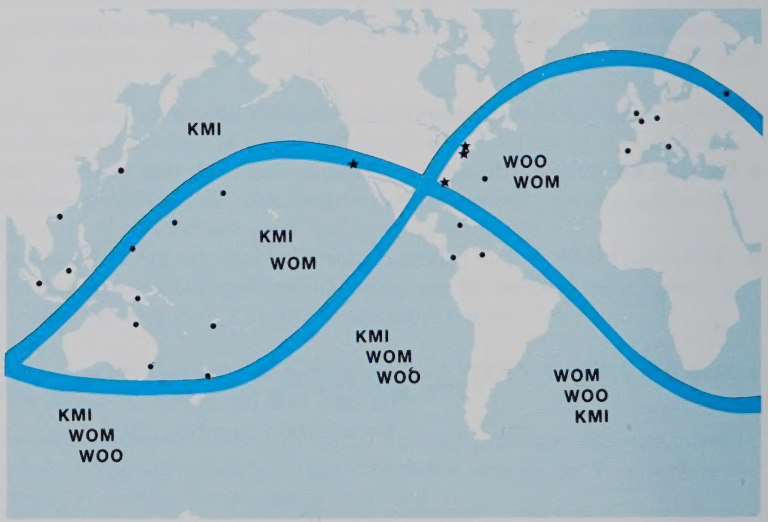
The Coast Stations

Points To Remember

- Aircraft and coast stations must transmit and receive on their assigned paired channels. "Crossband" operation is strictly forbidden.
- All High Seas stations continuously monitor the aircraft's transmitting channels.
- Do not wait for a traffic list broadcast before making a call. Demand calling is encouraged.
- No calls are accepted on a channel just before it is scheduled to carry a traffic list or weather broadcast. However, when a call is in progress, the broadcast is omitted on the busy channel.

Coast Station Coverage

The following map roughly indicates the general areas covered by AT&T's three coast stations.



NOTE

Large detailed Antenna Coverage Maps are available from your local Bell System Marketing Office, Long Lines Sales Office, or write to:

AT&T-Long Lines
High Seas Product Manager
RM 200
201 Littleton Road
Morris Plains, New Jersey 07950

NOTE

The frequencies shown for the coast stations are taken from information available at time of publication. It is suggested that the respective coast station be contacted for current frequencies.

Traffic List Broadcast

The three Bell System Coast Stations regularly broadcast a traffic list indicating those vessels or aircraft for which calls have been initiated.

Coast Station KMI — California

address: American Telephone and Telegraph Company
Station KMI
P.O. Box 8
Inverness, California 94937

for technical information call: (415) 669-1055 (collect)

aircraft-to-ground calls

Aircraft-to-ground calls are accepted at any time. There is no need to wait for traffic list broadcasts before making calls.

ground-to-aircraft calls

Dial your local operator from any private or pay telephone and ask for the High Seas Operator 362.

operating frequencies, channel designations, traffic lists, and weather broadcasts

Coast Station	Channel Designation	Coast Station Transmit (Carrier, kHz)	Aircraft Station Transmit (Carrier, kHz)
KMI Point Reyes Calif.	401	4357.4	4063.0
	416	4403.9	4109.5
	417	4407.0	4112.6
	804	8728.2	8204.3
	809	8743.7	8219.8
	822	8784.0	8260.1
	1201	13 100.8	12 330.0
	1202	13 103.9	12 333.1
	1203	13 107.0	12 336.2
	1229	13 187.6	12 416.8
	1230	13 190.7	12 419.9
	1602	17 236.0	16 463.1
	1603	17 239.1	16 466.2
	1624	17 304.2	16 531.3
	2214	22 636.3	22 040.3
	2223	22 664.2	22 068.2
	2228	22 679.7	22 083.7
	2236	22 704.5	22 108.5

Channels: 401, 804, 822, 1201, 1229 and 1602

GMT	Trfc	Weather
0000	X	X
0300	X	
0600	X	X
0900	X	
1200	X	
1500	X	X
1800	X	
2100	X	

Channels: 416, 809, 1202, 1203,1603 and 2214

GMT	Trfc	Weather
0100	X	
0400	X	
0700	X	
1000	X	
1300	X	X
1600	X	
1900	X	X
2200	X	

Coast Station WOM — Florida

address: American Telephone and Telegraph Company
Station WOM
1350 N.W. 40th Avenue
Fort Lauderdale, Florida 33313

for technical information call: (305) 587-0910 (collect)

aircraft-to-ground calls

Aircraft-to-ground calls are accepted at any time. There is no need to wait for traffic list broadcasts before making calls.

ground-to-aircraft calls

Dial your local operator from any private or pay telephone and ask for the High Seas Operator 362.

operating frequencies, channel designations, traffic lists, and weather broadcasts

Coast Station	Channel Designation	Coast Station Transmit (Carrier, kHz)	Aircraft Station Transmit (Carrier, kHz)
WOM Ft. Lauderdale Fla.	403	4363.6	4069.2
	412	4391.5	4097.1
	417	4407.0	4112.6
	423	4425.6	4131.2
	802	8722.0	8198.1
	805	8731.3	8207.4
	810	8746.8	8222.9
	814	8759.2	8235.3
	825	8793.3	8269.4
	831	8811.9	8288.0
	1206	13 116.3	12 345.5
	1208	13 122.5	12 351.7
	1209	13 125.6	12 354.8

Coast Station	Channel Designation	Coast Station Transmit (Carrier, kHz)	Aircraft Station Transmit (Carrier, kHz)
	1215	13 144.2	12 373.4
	1223	13 169.0	12 398.2
	1230	13 190.7	12 419.9
	1601	17 232.9	16 460.0
	1609	17 257.7	16 484.8
	1610	17 260.8	16 487.9
	1611	17 263.9	16 491.0
	1616	17 279.4	16 506.5
	2215	22 639.4	22 043.4
	2216	22 642.5	22 046.5
	2222	22 661.1	22 065.1

Channels: 403, 802, 1206, 1601 and 2215

GMT	Trfc	Weather
0030	X	
0430	X	
0830	X	
1230	X	X
1630	X	
2030	X	

Channels: 412, 805, 1208, 1609 and 2216

GMT	Trfc	Weather
0130	X	
0530	X	
0930	X	
1330	X	X
1730	X	
2130	X	

Channels: 417, 810, 1209 and 1610

GMT	Trfc	Weather
0230	X	
0630	X	
1030	X	
1430	X	
1830	X	
2230	X	X

Channels: 423, 825, 1215 and 1611

GMT	Trfc	Weather
0330	X	
0730	X	
1130	X	
1530	X	
1930	X	
2330	X	X

These are broadcasts of National Weather Service information. Traffic Lists and Weather will be omitted on any busy channel.

Coast Station WOO — New Jersey

address: American Telephone and Telegraph Company
Station WOO
P.O. Box 558, Beach Avenue
Manahawkin, New Jersey 08050

for technical information call: (609) 597-2201 (collect)

aircraft-to-ground calls

Aircraft-to-ground calls are accepted at any time. There is no need to wait for traffic list broadcasts before making calls.

ground-to-aircraft calls

Dial your local operator from any private or pay telephone and ask for the High Seas Operator 362.

operating frequencies, channel designations, traffic lists, and weather broadcasts

Coast Station	Channel Designation	Coast Station Transmit (Carrier, kHz)	Aircraft Station Transmit (Carrier, kHz)
WOO Manahawkin New Jersey	410	4385.3	4090.9
	411	4388.4	4094.0
	416	4403.9	4109.5
	422	4422.5	4128.1
	808	8740.6	8216.7
	811	8749.9	8226.0
	815	8762.3	8238.4
	826	8796.4	8272.5
	1203	13 107.0	12 336.2
	1210	13 128.7	12 357.9
	1211	13 131.8	12 361.0
	1228	13 184.5	12 413.7
	1230	13 190.7	12 419.9

Coast Station	Channel Designation	Coast Station Transmit (Carrier, kHz)	Aircraft Station Transmit (Carrier, kHz)
	1605	17 245.3	16 472.4
	1620	17 291.8	16 518.9
	1626	17 310.4	16 537.5
	1631	17 325.9	16 553.0
	2201	22 596.0	22 000.0
	2205	22 608.4	22 012.4
	2210	22 623.9	22 027.9
	2236	22 704.5	22 108.5

Channels: 410, 826, 1210, 1631, 2205

GMT	Trfc	Weather
0000	X	
0400	X	
0800	X	
1200	X	X
1600	X	
2000	X	X

Channels: 411, 815, 1211, 1605, 2210

GMT	Trfc	Weather
0100	X	
0500	X	
0900	X	
1300	X	X
1700	X	
2100	X	X

Channels: 416, 808, 1228, 1620, 2201

GMT	Trfc	Weather
0200	X	
0600	X	
1000	X	
1400	X	X
1800	X	
2200	X	X

Channels: 422, 811, 1203, 1626, 2236

GMT	Trfc	Weather
0300	X	
0700	X	
1100	X	
1500	X	X
1900	X	
2300	X	X

These are broadcasts of National Weather Service information. Traffic Lists and Weather will be omitted on any busy channel. Tel. No. (609) 597-2201 (call collect).

Arranging for High Seas Service

To arrange for service, call collect to the nearest Bell System High Seas station so they may assist you by explaining the requirements of the service. Or write to:

AT&T-Long Lines
High Seas Product Manager
RM 220
201 Littleton Road
Morris Plains, New Jersey 07950
or call: (201) 631-4165

CAUTION The frequencies shown for the High Seas network are subject to change and must not be relied upon for operational use. Contact the High Seas Product Manager for current frequencies on this network.

Aircraft Registration

Your aircraft can be registered for High Seas service by any of the following three methods:

- Contacting the High Seas Product Manager listed above.
- Calling the High Seas station nearest you (see pages 22 through 27) for processing your registration.
- Placing a High Seas Call and passing the billing information to the High Seas traffic operator, and requesting to be registered.

Mobile Marine Station WLO — Alabama

address: Mobile Marine Radio Inc.
Station WLO
7700 Rinla Avenue
Mobile, Alabama 36619

hours of service: 1030 to 0630 GMT daily.

traffic lists: 1300, 1800, and 2400 GMT.

weather broadcasts: 1300, 1800, and 2400 GMT.

operating frequencies, channel designations:

Mobile Marine Station	ITU Channel	Aircraft Receive (kHz)	Aircraft Transmit (kHz)
WLO Mobile, Alabama	824<	8790.2	8266.3
	829<	8805.7	8281.8
	830<	8808.8	8284.9
	1212<	13134.9	12364.1
	1225	13175.2	12404.4
	1226<	13178.3	12407.5
	1607<	17251.5	16478.6
	1632	17329.0	16556.1
	1641<	17356.9	16584.0
	2227	22676.6	22080.6
	2231	22689.0	22093.0
	2237	22707.6	22111.6

On channels so marked (<), it is not necessary to book calls by first calling in to WLO on CW or Marine Telex.

To reach WLO from long distance to place a Marine Radiotelephone call, dial "0" and ask the Operator for the "Mobile Alabama Marine Operator," or you may dial direct as follows:

telephone: 205 666-3555 WLO CH MARINE OPERATOR
205 666-2998 WLO HS MARINE OPERATOR

All "Marine Operators" are active production units. Calls relating to the business of the Company should be directed only to numbers listed below, as "Marine Operator" positions necessarily serve only the purpose of delivering or accepting calls.

business office hours: 8:00 am to 3:30 pm Monday through Friday.

telephone: 205 666-5110 Business office
205 666-5112 Technical information

Bern Radio
Swiss Maritime Radio Station

The Swiss maritime radio station has a worldwide range and can therefore contact ships or aircraft anywhere on the seven seas.

working hours Monday till Friday:

IMPORTANT NOTICE CONCERNING WORKING HOURS (QTU): CHANGES DURING SUMMERTIME IN EUROPE WILL BE BROADCAST.

in GMT (QTU)	**0000-0130, 0530-1030, 1200-1730, 1900-2200** **Saturday/Sunday and public holidays:** **0000-0130, 0530-0700, 0800-1000, 1200-1400, 1600-1800, 2000-2200**
traffic list in GMT	**Bern Radio emits a CW list at following hours:** **Monday till Friday:** **0000, 0530, 0700, 0830, 1000, 1200, 1330, 1500, 1630, 1900, and 2030** **Saturday/Sunday and public holidays:** **0000, 0530, 0830, 1200, 1330, 1630 and 2030**
watch (QSX)	**Bern Radio keeps watch in the common channels and in the group channel 4 (bands 4-16 MHz) and channel 2 (band 22 MHz) according to data emitted in the general call.** **Example:** **CQ DE HEB HEB HEB QSX CG 8 12 16 AND 22 K** **C refers to the common channels.** **G refers to the group channel.** **Watch is not kept on the frequencies where HEB is busy.**
radio-maritime letters -SLT-	**Bern Radio accepts RADIO-MARITIME LETTERS -SLT- to all European countries.** **SLT's will be mailed by HEB to respective destinations.**

special contacts upon request (QRX)	**The possibility of arranging special contacts with HEB is open to all ships. This special contact has to be arranged during normal working hours, indicating time and frequency.**

Radiotelephony

	AIRCRAFT RECEIVE	AIRCRAFT TRANSMIT
Carrier frequencies in kHz (QRG)	HEB14 4379.1	4084.7
	HEB18 8784.0	8260.1
	HEB33 13190.7	12419.9
	HEB17 17263.9	16491.0
	HEB62 22692.1	22096.1
	HEB24 4428.7	4134.3
	HEB28 8790.2	8266.3
	HEB23 13181.4	12410.6
	HEB27 17276.3	16503.4
	HEB52 22636.3	22040.3
	HEB38 8811.9	8288.0
	HEB13 13103.9	12333.1
	HEB37 17325.9	16553.0
	HEB72 22654.9	22058.9
reception	SSB all classes.	
working hours in GMT (QTU)	0000-0200, 0600-2200	
charges (QSJ)	For current charges, write or call Radio Swiss Ltd. as listed below.	
postal address:	Radio-Suisse Ltd. BERNA-RADIO Genfergasse 14 CH-3030 Berne, Switzerland	
Telephone:	031 22 84 91	
Telex:	397 or 147	

Worldwide Listing of Public Correspondence Stations

Besides the four domestic stations previously presented and the Bern station, there have been hundreds of maritime radiotelephone (public correspondence) stations authorized for operation around the world. The two listings which follow may help the operator to utilize some of these stations' services. The first listing provides the receive and transmit frequencies for each of the 176 ITU maritime radiotelephone channels. The second listing gives an alphabetical listing by country of each of the maritime radiotelephone stations and the ITU channel numbers assigned to them.

NOTE

The stations and ITU channels provided in the worldwide listing are those which have been **authorized** for operation. This does not necessarily indicate that each of these stations is presently active or that it is using all ITU channels assigned to it. This listing should be used as a guide only. It is highly recommended that the operator make prior arrangements with these stations before attempting contact to determine language used, rate and billing structure, actual channels used, times in operation and other essential data.

Maritime Radiotelephone Channel Designations

Channel	Aircraft Receive kHz	Aircraft Transmit kHz
401	4357.4	4063.0
402	4360.5	4066.1
403	4363.6	4069.2
404	4366.7	4072.3
405	4369.8	4075.4
406	4372.9	4078.5
407	4376.0	4081.6
408	4379.1	4084.7
409	4382.2	4087.8
410	4385.3	4090.9
411	4388.4	4094.0
412	4391.5	4097.1
413	4394.6	4100.2
414	4397.7	4103.3
415	4400.8	4106.4
416	4403.9	4109.5
417	4407.0	4112.6
418	4410.1	4115.7
419	4413.2	4118.8
420	4416.3	4121.9
421	4419.4	4125.0
422	4422.5	4128.1
423	4425.6	4131.2
424	4428.7	4134.3
425	4431.8	4137.4
426	4434.9	4140.5

601	6506.4	6200.0
602	6509.5	6203.1
603	6512.6	6206.2
604	6515.7	6209.3
605	6518.8	6212.4
606	6521.9	6215.5

Channel	Aircraft Receive kHz	Aircraft Transmit kHz
801	8718.9	8195.0
802	8722.0	8198.1
803	8725.1	8201.2
804	8728.2	8204.3
805	8731.3	8207.4
806	8734.4	8210.5
807	8737.5	8213.6
808	8740.6	8216.7
809	8743.7	8219.8
810	8746.8	8222.9
811	8749.9	8226.0
812	8753.0	8229.1
813	8756.1	8232.2
814	8759.2	8235.3
815	8762.3	8238.4
816	8765.4	8241.5
817	8768.5	8244.6
818	8771.6	8247.7
819	8774.7	8250.8
820	8777.8	8253.9
821	8780.9	8257.0
822	8784.0	8260.1
823	8787.1	8263.2
824	8790.2	8266.3
825	8793.3	8269.4
826	8796.4	8272.5
827	8799.5	8275.6
828	8802.6	8278.7
829	8805.7	8281.8
830	8808.8	8284.9
831	8811.9	8288.0

Channel	Aircraft Receive kHz	Aircraft Transmit kHz
1201	13100.8	12330.0
1202	13103.9	12333.1
1203	13107.0	12336.2
1204	13110.1	12339.3
1205	13113.2	12342.4
1206	13116.3	12345.5
1207	13119.4	12348.6
1208	13122.5	12351.7
1209	13125.6	12354.8
1210	13128.7	12357.9
1211	13131.8	12361.0
1212	13134.9	12364.1
1213	13138.0	12367.2
1214	13141.1	12370.3
1215	13144.2	12373.4
1216	13147.3	12376.5
1217	13150.4	12379.6
1218	13153.5	12382.7
1219	13156.6	12385.8
1220	13159.7	12388.9
1221	13162.8	12392.0
1222	13165.9	12395.1
1223	13169.0	12398.2
1224	13172.1	12401.3
1225	13175.2	12404.4
1226	13178.3	12407.5
1227	13181.4	12410.6
1228	13184.5	12413.7
1229	13187.6	12416.8
1230	13190.7	12419.9
1231	13193.8	12423.0
1232	13196.9	12426.1

Channel	Aircraft Receive kHz	Aircraft Transmit kHz
1601	17232.9	16460.0
1602	17236.0	16463.1
1603	17239.1	16466.2
1604	17242.2	16469.3
1605	17245.3	16472.4
1606	17248.4	16475.5
1607	17251.5	16478.6
1608	17254.6	16481.7
1609	17257.7	16484.8
1610	17260.8	16487.9
1611	17263.9	16491.0
1612	17267.0	16494.1
1613	17270.1	16497.2
1614	17273.2	16500.3
1615	17276.3	16503.4
1616	17279.4	16506.5
1617	17282.5	16509.6
1618	17285.6	16512.7
1619	17288.7	16515.8
1620	17291.8	16518.9
1621	17294.9	16522.0
1622	17298.0	16525.1
1623	17301.1	16528.2
1624	17304.2	16531.3
1625	17307.3	16534.4
1626	17310.4	16537.5
1627	17313.5	16540.6
1628	17316.6	16543.7
1629	17319.7	16546.8
1630	17322.8	16549.9
1631	17325.9	16553.0
1632	17329.0	16556.1
1633	17332.1	16559.2
1634	17335.2	16562.3
1635	17338.3	16565.4
1636	17341.4	16568.5
1637	17344.5	16571.6
1638	17347.6	16574.7
1639	17350.7	16577.8
1640	17353.8	16580.9
1641	17356.9	16584.0

Channel	Aircraft Receive kHz	Aircraft Transmit kHz
2201	22596.0	22000.0
2202	22599.1	22003.1
2203	22602.2	22006.2
2204	22605.3	22009.3
2205	22608.4	22012.4
2206	22611.5	22015.5
2207	22614.6	22018.6
2208	22617.7	22021.7
2209	22620.8	23024.8
2210	22623.9	22027.9
2211	22627.0	22031.0
2212	22630.1	22034.1
2213	22633.2	22037.2
2214	22636.3	22040.3
2215	22639.4	22043.4
2216	22642.5	22046.5
2217	22645.6	22049.6
2218	22648.7	22052.7
2219	22651.8	22055.8
2220	22654.9	22058.9
2221	22658.0	22062.0
2222	22661.1	22065.1
2223	22664.2	22068.2
2224	22667.3	22071.3
2225	22670.4	22074.4
2226	22673.5	22077.5
2227	22676.6	22080.6
2228	22679.7	22083.7
2229	22682.8	22086.8
2230	22685.9	22089.9
2231	22689.0	22093.0
2232	22692.1	22096.1
2233	22695.2	22099.2
2234	22698.3	22102.3
2235	22701.4	22105.4
2236	22704.5	22108.5
2237	22707.6	22111.6
2238	22710.7	22114.7
2239	22713.8	22117.8
2240	22716.9	22120.9

Maritime Radiotelephone Public Correspondence Stations

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
ALBANIA	Durres P.T. Radio	ZAD	402, 805, 1206, 1639, 2226
ALGERIA	Alger Radio	7TA	410, 413, 424, 426, 601, 603, 605, 802, 809, 813, 825, 1207, 1215, 1217, 1232, 1629, 1631, 1636, 1641, 2205, 2225, 2227, 2238
ARGENTINA	Bahia Blanca Radio	LPW	406, 421, 601, 818, 821
	Corrientes Radio	LPB	424, 810
	General Pacheco Radio	LPL	413, 421, 426, 603, 606, 802, 814, 821, 1220, 1221, 1601, 1621, 2204, 2221
	Ushuaia Radio	LPC	410, 812, 1230
AUSTRALIA	Adelaide Radio	VIA	419, 424, 603, 817, 1227
	Brisbane Radio	VIB	404, 415, 424, 603, 811, 1229
	Broome Radio	VIO	424, 603
	Carnarvon Radio	VIC	424, 603
	Darwin Radio	VID	415, 424, 603, 811, 815, 1227, 1229
	Esperance Radio	VIE	424, 603
	Hobart Radio	VIH	424, 603
	Melbourne Radio	VIM	404, 424, 603, 811, 1226
	Perth Radio	VIP	404, 424, 603, 811, 1226
	Rockhampton Radio	VIR	424, 603
	Sydney Radio	VIS	405, 417, 424, 603, 802, 829, 1203, 1231, 1602, 1610, 2203, 2223
	Thursday Island Radio	VII	424, 603
	Townsville Radio	VIT	419, 424, 603, 817

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
AZORES	Miguel Radio	CUG	426, 813, 1207, 1615, 1632, 2207, 2222
BAHRAIN	Bahrain Radio	A9M	413, 806, 1209, 1618
BANGLADESH	Chittagong Radio	S3D	402, 416, 421, 602, 606, 806, 821, 1202, 1221, 1603, 2202
	Khulna Radio	S3E	413, 416, 421
BARBADOS	Barbados Radio	8PO	407, 816, 825, 1213, 1640
BELGIUM	Oostende Radio	OSU	408, 411, 417, 421, 422, 425, 602, 606, 803, 805, 806, 812, 813, 815, 821, 829, 1207, 1213, 1215, 1218, 1219, 1221, 1609, 1613, 1621, 1625, 1627, 1630, 2209, 2214, 2219, 2221, 2225, 2239
BERMUDA	Bermuda Radio	VRT	410, 603, 817, 1220, 1618
BRAZIL	Belem Radio	PPL	404, 405, 419, 819, 821, 822, 830, 1228, 1633
	Fortaleza Radio	PPF	819, 821, 828
	Ilheus Radio	PPI	404, 405, 819, 821, 824
	Itajai Radio	PPC	404, 405, 819, 821, 822
	Juncao Radio	PPJ	404, 409, 419, 819, 821, 824, 828, 1228, 1617
	Manaus Radio	PPM	404, 405, 416, 819, 821, 830
	Natal Radio	PPN	404, 409, 819, 821, 830
	Olinda Radio	PPO	404, 405, 419, 819, 821, 824, 828, 1211, 1606
	Rio Radio	PPR	404, 405, 409, 416, 419, 819, 821, 822, 828, 830, 1214, 1221, 1611, 1613, 1621, 2221, 2238

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
BRAZIL	Salvador Radio	PPA	404, 409, 416, 819, 821, 822
	Santarem Radio	PPT	404, 409, 819, 821, 824, 1209
	Santos Radio	PPS	404, 409, 416, 819, 821, 824, 1219
	S. Luis Radio	PPB	404, 409, 819, 821, 824
	Vitoria Radio	PPV	404, 409, 416, 819, 821, 828
CANADA	Cambridge Bay Coast Guard Radio	VFC	403
	Coppermine Coast Guard Radio	VFU	403
	Coral Harbor Coast Guard Radio	VFU	407
	Frobisher Bay Coast Guard Radio	VFF	407, 603, 812, 1201, 1634
	Goose Bay Coast Guard Radio	VFZ	408
	Halifax Coast Guard Radio	VCS	413, 418, 605, 823, 1213, 1604
	Inuvik Coast Guard Radio	VFA	403
	Killinek Coast Guard Radio	VAW	407
	Resolute Coast Guard Radio	VFR	407, 825
	Vancouver Coast Guard Radio	VAI	410, 605, 807, 1207, 1608, 2220
	Vancouver Radio (B.C. Tel.)	CFW	418
CAPE VERDE	Praia de Cabo Verde Radio	D4D	418, 820, 1218, 1623
	S. Vicente de Cabo Verde Radio	D4A	418, 820, 1218, 1623

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
CHILE	Valparaiso Playa Ancha Radiomaritima	CBV	419, 421, 425, 601, 606, 807, 809, 815, 821, 1210, 1218, 1221, 1224, 1621, 1631, 1640, 2221, 2225, 2240
COLOMBIA	Barranquilla Radio	HKB	406, 826, 1203, 1615
	Buenaventura Radio	HKC	406, 826, 1203, 1615
COOK ISLANDS	Rarotonga Radio	ZKR	821, 825
CUBA	Havana Radio	CLA	401, 418
	Santiago de Cuba Radio	CLM	418, 809, 1217, 1626
CYPRUS	Cyprus Radio	5BA	406, 414, 421, 426, 603, 606, 807, 818, 820, 821, 829, 1201, 1208, 1221, 1230, 1603, 1621, 1632, 2212, 2218, 2221
DENMARK	Lyngby Radio	OXZ	401, 403, 409, 415, 418, 420, 421, 424, 425, 426, 603, 605, 606, 801, 808, 811, 813, 818, 821, 823, 825, 827, 829, 1203, 1210, 1211, 1214, 1215, 1217, 1219, 1221, 1223, 1226, 1601, 1603, 1605, 1608, 1614, 1617, 1618, 1621, 1622, 1635, 1641, 2203, 2208, 2211, 2213, 2216, 2218, 2221, 2228, 2234, 2236
DJIBOUTI	Djibouti Radio	J2A	418, 827, 1210
EGYPT	Alexandria Radio	SUY	418, 605, 817, 1216, 1610, 2226
ETHIOPIA	Assab Radio	ETC	403, 605, 805

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
FIJI	Suva Radio	3DP	406, 810
FRANCE	S. Lys Radio	FFL	404, 405, 416, 419, 817, 825, 828, 830, 1222, 1226, 1229, 1231, 1604, 1619, 1628, 1633, 2204, 2226, 2231, 2235
FRENCH SOUTHERN & ANTARCTIC LANDS	S. Paul et Amsterdam Radio	FJY	411, 825
FINLAND	Hanko Radio	OFI	406, 413, 414, 417, 422
	Helsinki Radio	OHG	406, 413, 414, 417, 422, 802, 804, 805, 809, 829, 1206, 1209, 1213, 1216, 1224, 1227, 1230, 1606, 1611, 1614, 1615, 1623, 1636, 1638, 2204, 2210, 2214, 2222, 2231
GAMBIA	Banjul Radio	C5G	405, 829
GERMANY (FEDERAL REPUBLIC OF)	Norddeich Radio	DAP	401, 824, 1205, 1610, 2217
		DAK	412, 815, 1208, 1624, 2238
		DAH	413, 828, 1212, 1639, 2222
		DAJ	414, 601, 817, 1224, 1616, 2207
		DAI	423, 820, 1218, 1634, 2223
GERMAN DEMOCRATIC REPUBLIC	Ruegen Radio	Y5P	405, 407, 410, 419, 802, 809, 826, 831, 1202, 1204, 1206, 1232, 1619, 1629, 1633, 1640, 2220, 2224, 2226, 2230

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
GHANA	Takoradi Radio	9GA	402, 601, 823, 1202, 1616, 2213
	Tema Radio	9GX	409, 602, 825, 1224, 1622, 2215
GIBRALTAR	Gibraltar Naval Radio	GYU	401, 404, 602, 807, 1212, 1611, 2212
GREECE	Athinai Radio	SVN	413, 415, 424, 425, 603, 802, 806, 808, 809, 814, 819, 820, 823, 1204, 1207, 1212, 1220, 1232, 1607, 1609, 1625, 1626, 1627, 1629, 1640, 2217, 2219, 2224, 2231, 2235
GUINEA-BISSAU	Bissau Radio	J5M	413, 426, 802, 813, 1203, 1615, 1635
HONG KONG	Cape D'Aguilar Radio (Hong Kong Radio)		411, 417, 606
ICELAND	Hornafjoerdur Radio	TFT	406, 414, 416, 419
	Reykjavik Radio	TFA	406, 414, 416, 419, 601, 603, 805, 807, 809, 831, 1206, 1208, 1215, 1220, 1606, 1615, 1625, 1630, 2225, 2226
	Siglufjoerdur Radio	TFX	406, 414, 416, 419
INDONESIA	Amboina Radio	PKE	408, 826, 1210
	Banjarmasin Radio	PKG	411, 602, 816
	Belawan Radio	PKB	810, 1205
	Bitung Radio	PKM	418, 830, 1209
	Dumai Radio	PKP	401, 816, 1209
	Jakarta Radio	PKI	812, 1210, 1610, 2234
	Kupang Radio	PKK	604

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
INDONESIA	Makassar Radio	PKF	414, 828, 1201
	Palembang Radio	PKC	414, 830
	Sabang Radio	PKA	411, 826
	Semarang Radio	PKR	422, 604, 828
	Sorong Radio	PKY	422, 601, 828
	Surabaya Radio	PKD	408, 826, 1212
	Telukbayur Radio	PKP	605
IRAN	Abadan Radio	EQA	407, 604, 1605
	Abbas Radio	EQI	416, 604, 805, 1616, 2235
	Bushire Radio	EQM	405, 604, 810, 1629, 2203
	Khark Radio	EQQ	410, 604, 1220
	Khoramshahr Radio	EQK	408, 604, 824, 1625, 2205
	Lavan Radio	EQR	420, 604
	Nowshahr Radio	EQO	411, 604, 817
	Shahpoor Radio	EQN	402, 604, 829, 1231, 2233
ISRAEL	Haifa Radio	4XO	404, 410, 418, 423, 603, 604, 801, 805, 812, 821, 827, 1204, 1207, 1213, 1215, 1221, 1609, 1613, 1617, 1628, 2204, 2207, 2217
ITALY	Genova P.T. Radio	ICB	408, 409, 806, 823, 1205, 1211, 1608, 1614, 2216
	Roma P.T. Radio	IAR	402, 412, 420, 423, 602, 604, 814, 819, 820, 826, 831, 1206, 1209, 1213, 1218, 1230, 1603, 1606, 1616, 1624, 2202, 2211, 2223, 2237
IVORY COAST	Abidjan Peche Radia		404, 602, 806, 1212
	Abidjan Radio	TUA	419, 603, 822, 1205, 1634, 2225

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
JAMAICA	Kingston Jamaica Radio	6YI	405, 416, 605, 812, 1224
JAPAN	Tokyo Radio	JBO	407, 425, 426, 810, 812, 820, 1207, 1212, 1218, 1604, 1609, 1632, 2227, 2236, 2240
KENYA	Mombasa Radio	5ZF	414, 822
KIRIBATI (Republic of)	Tarawa Radio	T3T	411, 814
KOREA (Republic of)	Seoul Radio	HLS	401, 419, 602, 605, 803, 827, 1213, 1229, 1634, 1637, 2209, 2222
LEBANON	Beyrouth Radio	ODR	426, 828, 1216
MADAGASCAR	Antalaha Radio		402
	Diego-Suarez Radio	5RL	415
	Fort-Dauphin Radio	5RD	406
	Maintirano Radio		415
	Majunga Radio	5RO	415
	Manakara-Sud Radio		402
	Manajary Radio		415
	Morondava Radio		406
	Nossi-Be Radio	5RN	406
	Tamatave Radio	5RS	406, 604, 605, 807, 831, 1206, 1225, 1637, 2240
MADEIRA	Madeira Radio	CUB	413, 426, 802, 813, 1203, 1207, 1615, 1632, 2207, 2222
MARTINIQUE (French Dept. of)	Fort de France Radio	FFP	404, 424, 825, 828

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
MEXICO	Acapulco, Guerrero Radio	XFA	403, 408, 421, 603, 604, 606, 809, 821, 826, 1209, 1221, 1222, 1604, 1614, 1621, 2221, 2225, 2234
	Chetumai, Quintana Roo Radio	XFP	404, 413, 421, 601, 604, 606, 817, 821, 829, 1209, 1221, 1222, 1604, 1614, 1621, 2221, 2225, 2238
	Ciudad del Carmen Campeche Radio	XFB	404, 413, 421, 606, 809, 821, 826, 1209, 1221, 1222, 1604, 1614, 1621, 2221, 2225, 2234
	Coatzacoalcos, Veracruz Radio	XFF	404, 413, 421, 603, 604, 606, 817, 821, 829, 1221, 1222, 1225, 1604, 1614, 1621, 2221, 2234, 2238
	Cozumel, Quintana Roo Radio	XFC	403, 408, 421, 603, 604, 606, 809, 821, 826, 1209, 1221, 1225, 1604, 1614, 1621, 2221, 2225, 2234
	Ensenada, Baja California Radio	XFE	403, 413, 421, 603, 604, 606, 809, 821, 826, 1209, 1221, 1222, 1604, 1614, 1621, 2221, 2225, 2234
	Guaymas-Sonora Radio	XFY	404, 413, 421, 606, 817, 821, 829, 1209, 1221, 1225, 1604, 1614, 1621, 2221, 2225, 2238
	La Pax, Baja California Radio	XFK	404, 413, 421, 603, 604, 606, 817, 821, 829, 1221, 1222, 1225, 1604, 1621, 2221, 2234, 2238
	Manzanillo, Colima Radio	XFM	404, 413, 421, 601, 603, 606, 817, 821, 829, 1209, 1221, 1222, 1604, 1614, 1621, 2221, 2225, 2234
	Mazatlan, Sinaloa Radio	XFL	403, 408, 601, 604, 606, 809, 821, 826, 1209, 1221, 1225, 1604, 1621, 2221, 2225, 2238

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
MEXICO	Progreso, Yucatan Radio	XFN	404, 413, 421, 601, 603, 606, 817, 821, 829, 1221, 1222, 1225, 1614, 1617, 1621, 2221, 2234, 2238
	Salina Cruz, Oaxaca Radio	XFQ	404, 413, 421, 601, 604, 606, 817, 821, 829, 1221, 1222, 1225, 1604, 1621, 2221, 2234, 2238
	Tampico, Tamaulipas Radio	XFS	404, 413, 421, 601, 604, 606, 817, 821, 829, 1221, 1222, 1225, 1604, 1614, 1621, 2221, 2225, 2238
	Veracruz, Veracruz Radio	XFU	404, 413, 421, 601, 604, 606, 817, 821, 829, 1209, 1221, 1222, 1604, 1621, 2221, 2234, 2238
MONACO	Monaco Radio	3AC	403, 413, 421, 602, 804, 809, 821, 1221, 1224, 1607, 1621, 2219, 2221
MOROCCO	Casablanca Radio	CNP	828, 1223, 1638
NAURU	Nauru Radio	C2N	817
NETHERLANDS ANTILLES	Curacao Radio	PJC	408, 803, 1207, 1607
NETHERLANDS	Scheveningen Radio	PCG	405, 407, 410, 419, 421, 602, 606, 805, 806, 821, 826, 1207, 1213, 1219, 1221, 1621, 1623, 1636, 1639, 2205, 2221, 2232
NEW CALEDONIA & Dependencies	Noumea Radio	RJP	404, 805, 1205
NEW ZEALAND	Awarua Radio	ZLB	421
	Wellington Radio	ZLW	408, 421, 601, 807, 1209, 1606, 2213

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
NORWAY	Rogaland Radio	LGN	401, 403, 407, 409, 415, 418, 420, 421, 424, 425, 426, 603, 605, 606
		LFL	801, 803, 808, 809, 810, 811, 813, 818, 821, 823, 825, 827, 828, 829, 1203, 1204, 1205, 1210, 1211, 1213, 1214, 1217, 1218, 1219, 1221, 1222, 1223, 1225, 1226, 1228, 1231
		LFN	1601, 1603, 1604, 1605, 1607, 1608, 1610, 1613, 1614, 1617, 1618, 1619, 1620, 1621, 1622, 1627, 1629, 1635, 1641, 2202, 2203, 2208, 2211, 2213, 2215, 2216, 2218, 2221, 2228, 2230, 2233, 2234, 2236, 2237, 2239, 2240
PAPUA NEW GUINEA	Port Moresby Radio	P2M	409, 417, 604, 805
	Rabaul Radio	P2R	409, 417, 604, 805, 1225
PHILIPPINES	Bacoor Radio	DZI	409, 605, 817, 1220, 1605
	Bulacan Radio	DZJ	418, 603, 814, 1201, 1605
	Bulacan Radio	DZO	409, 605, 820, 1220, 1605
	Cebu Radio	DYP	825
	Iloilo Radio	DYV	412, 820
	Manila Radio	DZZ	418, 603, 808, 1201, 1605
POLAND	Gdynia Radio	SPF	402, 804, 1209, 1633, 2206
		SPD	406, 824, 1229, 1631, 2232
		SPC	423, 602, 812, 1216, 1607, 2215
		SPG	806, 1231, 2209
	Szczecin Radio	SPR	404, 830, 1227, 1638
		SPO	408, 604, 810, 1220, 1625, 2219

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
FRENCH POLYNESIA	Mahina Radio	FJA	416, 829, 1605
PORTUGAL	Lisboa Radio	CUL	413, 602, 802, 1203, 1615, 1632, 2207, 2222
PUERTO RICO	Q.P.P.A. Radio	A7S	423, 804, 1229, 1626, 2235
REUNION (French Dept. of)	S. Denis Reunion	FFD	404, 418, 819, 824
SAMOA (American)	Pago Pago Radio	KUQ	408, 806, 1232, 1638
SAMOA (Western)	Apia Radio	5WA	603, 820, 1213, 1624, 2219
SAUDI ARABIA	Dammam Radio	HZG	406, 409, 421, 601, 603, 606, 808, 811, 821, 1202, 1221, 1223, 1602, 1609, 1621, 2221, 2222, 2231
SENEGAL	Dakar Radio	6VA	404, 803, 1212, 1629, 2220
SEYCHELLES (Republic of)	Seychelles Radio	S7Q	410, 818, 1215, 1601
S. HELENA	S. Helena Radio	ZHH	414, 807, 1217
SINGAPORE	Singapore Radio	9VG	405, 407, 602, 606, 804, 815, 821, 824, 1216, 1219, 1221, 1613, 1621, 1641, 2212, 2221
SOLOMON ISLANDS	Honiara Radio	VQJ	830

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
SOUTH AFRICA	Cape Town Radio	ZSC	405, 421, 821, 1209, 1608, 2204
	Durban Radio	ZSD	407, 421, 602, 808, 821, 1221, 1224, 1633, 2206
SPAIN	Pozuelo del Rey Radio	EHY	406, 407, 409, 411, 416, 601, 604, 803, 804, 810, 816, 818, 1201, 1208, 1210, 1225, 1227, 1620, 1630, 1634, 1637, 1639, 2201, 2224, 2226, 2229, 2234
SURINAME	Paramaribo Radio	PZN	408, 808 1207, 1608
SWEDEN	Goteborg Radio	SAG, SAB	401, 403, 409, 418, 420, 424, 603, 605, 801, 803, 808, 811, 818, 825, 827, 829, 1203, 1210, 1211, 1214, 1215, 1217, 1219, 1223, 1226, 1601, 1603, 1605, 1608, 1614, 1617, 1618, 1622, 1635, 1641, 2203, 2208, 2211, 2213, 2218, 2228, 2230, 2234
	Harnosand Radio	SAH	401, 420, 424
TOGO	Lome Radio	5VA	403
TURKEY	Antalya Radio	TAM	409, 1620
	Canakkale Radio	TAM	407, 810, 1226
	Iskenderun Radio	TAM	420
	Istanbul Radio	TAN	417, 811, 831, 1218, 1608, 2230
	Izmir Radio	TAN	401, 602, 1618
	Mersin Radio	TAM	803, 1206, 1216, 1611, 2213, 2214
	Samsun Radio	TAN	420, 1606
	Trabzon Radio	TAO	401, 602
	Zonguldak Radio	TAN	411, 1222

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
TUVALU	Funafuti Island Radio		814, 1207, 1608
UNITED KINGDOM	Portishead Radio	GKT	402, 406, 410, 802, 1201, 1202, 1206, 1602, 1606, 2206
		GKV	426, 822, 826, 1224, 1228, 1230, 1623, 2227, 2229
		GKU	816, 819, 1611, 1615, 1618, 2212, 2220
		GKW	831, 1232, 1632, 1637, 1640
U.S.S.R.	Arkhangelsk Radio		401, 823, 1209, 1626
	Astrakhan Radio		405, 804
	Baku Radio		405, 807
	Jdanov, Donetskoi Radio		413, 1641
	Kholmsk Radio		1626, 2213
	Klaipeda Radio		405, 1205, 1601
	Leningrad Radio		414, 807, 1204, 1605, 2213
	Moskva Radio		1201, 1606, 2207
	Murmansk Radio		402, 824
	Nakhodka, Primorskogo Radio		1613
	Novorossiisk, Krasnodarskogo Radio		405, 815, 1209, 1601, 2231
	Odessa Radio		1205, 1623, 2202, 2218
	Riga Radio		401, 1205, 1630
	Vladivostok Radio		401, 603, 805, 1201, 1607, 2202

COUNTRY	NAME OF STATION	I.D.	CHANNEL NO
UNITED STATES	Mobile, Alabama Radio	WLO	824, 829, 830, 1212, 1225, 1226, 1607, 1632, 1641, 2227, 2231, 2237
	Point Reyes, California Radio	KMI	401, 416, 417, 804, 809, 822, 1201, 1202, 1203, 1229, 1602, 1603, 1624, 2214, 2223, 2228, 2236
	Ft. Lauderdale, Florida Radio	WOM	403, 412, 417, 423, 802, 805, 810, 814, 825, 831, 1206, 1208, 1209, 1215, 1223, 1230, 1601, 1609, 1610, 1611, 1616, 2215, 2216, 2222
	Manahawkin, New Jersey Radio	WOO	410, 411, 416, 422, 808, 811, 815, 826, 1203, 1210, 1211, 1228, 1605, 1620, 1626, 1631, 2201, 2205, 2210, 2236
VANUATU	Port-Vila Radio	YJM	410, 421, 606, 818
VIET NAM	Hai Phong Radio	XVG	403, 421
	Vung Tau Radio	XVR	413, 415
YEMEN (P.D.R. of)	Aden Radio	7OA	412, 819
YUGOSLAVIA	Rijeka Radio	YUR	408, 419, 602, 605, 810, 830, 1224, 1229, 1611, 1627, 2204, 2206, 2239

International Distress Frequencies

The frequencies of 2182 kHz and 8364 kHz have been designated as INTERNATIONAL DISTRESS FREQUENCIES. They are monitored worldwide and should be used only in the case of an actual emergency.

Emergency Procedures

Two frequencies are listed as general calling and emergency frequencies: 2182 and 8364 kHz. In an emergency, shift to either of these frequencies, depending on the distance involved, and transmit your emergency communication. "May day" is the official approved distress signal. Anything goes, however, to attract attention to your situation. Remember to transmit your position, the nature of the emergency, and your call sign.

It is imperative that you do not interfere with distress communications. Severe penalties are provided for deliberate interference. If asked, relay distress communications as needed.

If repeated calls do not bring a response, the flight crew may wish to try the U.S. Coast Guard on the following channels.

U.S.C.G CHANNELS/FREQUENCIES		
ITU CHANNEL NO	AIRCRAFT RECEIVE (KHZ)	AIRCRAFT TRANSMIT (kHz)
424	4428.7	4134.3
601	6506.4	6200.0
816	8765.4	8241.5
1205	13113.2	12342.4
1625	17307.3	16534.4

If the Coast Guard can't be reached on one of these channels/frequencies, try a maritime radiotelephone (public correspondence) operator channel. The marine operator may be able to connect you to the Coast Guard or to commercial vessels in your area.

It is also possible to obtain emergency assistance from the Air Traffic Control agency you are in contact with via hf ground stations. If you declare an emergency to Air Traffic Control, you can receive special handling similar to services provided on vhf to an aircraft in distress.

Quick-Reference Directory

LOCATION	CALL SIGN	FREQUENCY	MODE

Collins Defense
Communications Division
Defense Electronics Operations
Cedar Rapids, Iowa 52498

•523-0763224-006117 8-1-83 Printed in USA

Rockwell International
Collins Defense Communications Division